Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A process, comprising:

converting digital video signals having images organized in blocks of pixels between a first format and a second format, said second format being a format compressed via vector quantization, said converting including:

obtaining said vector quantization from repeated application in a spatial domain of a scalar quantizer to the pixels, which are in the spatial domain, of said blocks with a quantization step determined in an adaptive way according to characteristics of the pixels in the spatial domain, wherein said quantization step determined in the adaptive way is performed in the spatial domain instead of transforming the pixels to a frequency domain, wherein said obtaining said vector quantization includes:

identifying a sharpness value of edges in each of said blocks of pixels, and quantizing said sharpness value to divide the edges into a number of classes; and

attributing a value to said quantization step differentiated according to the classes, wherein the value of the quantization step is increased near the edges of said images having said pixels,

wherein a same said quantization step is used for said scalar quantizer applied to each pixel within a block.

2. (Original) The process according to claim 1 wherein said quantization step is determined so as to increase according to a lack of uniformity of the pixels in the block.

3. (Original) The process according to claim 2 wherein said quantization step is determined by a law increasing according to multiples.

4. (Previously Presented) The process according to claim 1 wherein said converting includes detecting a level brightness of pixels in a block and determining said quantization step in such a way that said quantization step increases as a function of said level of brightness.

5. (Previously Presented) The process according to claim 1 wherein said converting includes:

detecting a lack of uniformity of the pixels in a block;

detecting a level of brightness of the pixels in the block; and

determining said quantization step in such a way that said quantization step first increases and then decreases as a function of said lack of uniformity and said level of brightness.

6. (Original) The process according to claim 5 wherein said quantization step is made to increase and decrease by multiples or sub-multiples.

7. (Original) The process according to claim 4 wherein detecting the level of brightness of the pixels in the block is carried out by detecting a mean level of brightness of the pixels in the block.

8. (Original) The process according to claim 1, wherein in passage from said first format to said second format, said digital video signals are subjected to at least one of the following:

sub-sampling;

low-pass filtering for anti-aliasing purposes before sub-sampling; and

multiplexing of at least one part of digital data necessary for representation of an image.

9. (Original) The process according to claim 1 wherein the digital video signals include multiplexed chromatic components, wherein in passage from said first format to said second format, the process further comprising re-ordering the pixels in each block to be

quantized by composing them in a vector such that the multiplexed chromatic components are quantized separately.

10. (Previously Presented) The process according to claim 1 wherein said converting includes identifying, in a context of said digital video signals, blocks of uniform pixels, choosing for said blocks of uniform pixels a minimum quantization step among quantization steps adopted in said vector quantization.

11. (Original) The process according to claim 1 wherein said digital video signals in said second format are expressed in a form of binary codes associated to respective quantized signals, the process further comprising executing a function of prediction of said binary codes.

12. (Original) The process according to claim 11 wherein said function of prediction of the binary codes is carried out according to a DPCM scheme.

13. (Original) The process according to claim 1 wherein in passage from said first format to said second format, the signal compressed via vector quantization is subjected to entropic encoding.

14. (Original) The process according to claim 13 wherein said entropic encoding is performed with a technique chosen from at least one of run-length encoding, Huffmann encoding, and arithmetic encoding.

15. (Original) The process according to claim 1 wherein said vector quantization is a multi-dimensional vector quantization resulting from concatenation of a plurality of vector quantizations, each resulting from repeated application of a scalar quantization.

16. (Original) The process according to claim 15 wherein for each of said concatenated vector quantizers, binary codes of reconstruction points are assigned in such a way that the reconstruction points with small distance in multi-dimensional space have binary codes with small difference.

17. (Previously Presented) The process according to claim 1 wherein said vector quantization is obtained with application of two scalar quantizers with quantization steps scaled by constants 2/3 and sin ($\pi/3$).

18. (Previously Presented) The process according to claim 17 wherein said converting includes defining points of reconstruction allowed so that these points will form a hexagonal lattice.

19. (Canceled)

20. (Previously Presented) The process according to claim 1 wherein said quantization step is determined according to at least one law chosen from the following:

$m^*E_Q + q$; and

$m^*(t^\wedge E_Q) + q$;

where m and q are constants, determined selectively, and E_Q is an index which identifies said edge classes, and t is a scalar value.

21. (Previously Presented) The process according to claim 4 wherein said converting includes:

dividing said level of brightness of the pixels in the block in a number of classes; and

selecting a value of said quantization step in a different way according to the classes thus determined.

22. (Original) The process according to claim 1 wherein said video signals in said first format are signals generated according to a so-called Bayer pattern, which can be ordered in blocks of size 4x2 having the following pattern of chromatic components:

row 1 = $G_1R_1G_2R_2$,

row 2 = $B_1G_3B_2G_4$;

and wherein said vector quantization is a two-dimensional vector quantization applied to pairs $<R_1, R_2>$, $<B_1, B_2>$ together with $<G_1, G_2>$, $<G_3, G_4>$ or $<G_1, G_3>$, $<G_2, G_4>$.

23. (Original) The process according to claim 1 wherein said digital video signals in said first format are digital video signals in the RGB format and wherein said digital video signals in said second format are subjected to a change of co-ordinates to a color space chosen from at least one of YCbCr, YUV, UIQ, and YDbDr.

24. (Original) The process according to claim 1 wherein said vector quantization is applied to adjacent pairs of pixels in a luminance plane.

25. (Original) The process according to claim 8 wherein in said digital video signals in said second format, chrominance planes are sub-sampled according to a quincunx pattern.

26. (Previously Presented) A system for converting digital video signals having images organized in blocks of pixels between a first format and a second format, said second format being a format compressed via vector quantization, the system comprising:

at least one converter chosen between an encoder and a decoder and wherein said converter is configured for a vector quantization resulting from repeated application in a spatial domain of a scalar quantizer to the pixels, which are in the spatial domain, of said blocks with a quantization step determined in an adaptive way according to characteristics of the pixels in the spatial domain, wherein said quantization step determined in the adaptive way is performed in the spatial domain instead of transforming the pixels to a frequency domain, wherein said converter is configured to:

identify a sharpness value of edges in each of said blocks of pixels, and quantize said sharpness value to divide the edges into a number of classes; and

attribute a value to said quantization step differentiated according to the classes, wherein the value of the quantization step is increased near the edges of said images having said pixels,

wherein a same said quantization step is used for said scalar quantizer applied to each pixel within a block.

27. (Original) The system according to claim 26 wherein said converter is configured to determine said quantization step in such a way that said quantization step increases according to a lack of uniformity of the pixels in a block.

28. (Original) The system according to claim 27 wherein said converter is configured to determine said quantization step by a law increasing according to multiples.

29. (Original) The system according to claim 26 wherein said converter is configured to detect a level of brightness of pixels in a block and determine said quantization step in such a way that said quantization step grows as a function of said level of brightness.

30. (Original) The system according to claim 26 wherein said converter is configured to:

detect a lack of uniformity of the pixels in a block;

detect a level of brightness of the pixels in the block; and

determine said quantization step in such a way that said quantization step first increases and then decreases as a function of said lack of uniformity and said level of brightness.

31. (Original) The system according to claim 30 wherein said converter is configured to increase and decrease said quantization step by multiples or sub-multiples.

32. (Original) The system according to claim 29 wherein said converter is configured to detect a level of brightness of the pixels in the block by detecting a mean level of brightness of the pixels in the block.

33. (Original) The system according to claim 26 wherein said converter is an encoder configured to subject said digital video signals to at least one operation chosen from:

sub-sampling;

low-pass filtering for anti-aliasing purposes before sub-sampling; and

multiplexing of at least one part of digital data necessary for representation of an image.

34. (Original) The system according to claim 26 wherein the digital video signals comprise multiplexed chromatic components, wherein said encoder is configured to re-order the pixels in each block to be quantized by composing them in a vector such that the multiplexed chromatic components are quantized separately.

35. (Original) The system according to claim 26 wherein said encoder is configured to identify, in a context of said digital video signals, blocks of uniform pixels and to choose for said blocks of uniform pixels a minimum quantization step among quantization steps adopted in said vector quantization.

36. (Original) The system according to claim 26 wherein said converter is configured in such a way that said digital video signals in said second format are expressed in a form of binary codes associated to respective quantized signals and wherein said converter is configured to execute a function of prediction of said binary codes.

37. (Original) The system according to claim 36 wherein said function of prediction of the binary codes is carried out according to a DPCM scheme.

38. (Original) The system according to claim 26 wherein said converter is configured to subject the signals converted from said first format to said second format to a function of entropic encoding or decoding.

39. (Original) The system according to claim 38 wherein said entropic encoding is performed with a technique chosen from at least one of: run-length encoding, Huffmann encoding, and arithmetic encoding.

40. (Original) The system according to claim 26 wherein said converter is configured for a vector quantization having a multi-dimensional vector quantization resulting from concatenation of a plurality of vector quantizations, each resulting from repeated application of a scalar quantization.

41. (Original) The system according to claim 40 wherein said converter is configured to assign binary codes of reconstruction points for each of said concatenated vector quantizations in such a way that the reconstruction points with small distance in a multi-dimensional space have binary codes with small difference.

42. (Original) The system according to claim 26 wherein said converter is configured to obtain an application of two scalar quantizers with quantization steps scaled by constants 2/3 and sin (π/3).

43. (Original) The system according to claim 42 wherein said converter is configured to define points of reconstruction allowed so that these points will form a hexagonal lattice.

44. (Canceled)

45. (Previously Presented) The system according to claim 26 wherein said converter is configured to determine said quantization step (Q) according to at least one law chosen from:

$m*E_Q + q$; and

$m*(t\text{^}E_Q) + q$;

where m and q are constants, determined selectively and E_Q is an index which identifies said edge class, and t is a scalar value.

46. (Original) The system according to claim 29 wherein said converter is configured to:

divide said level of brightness of the pixels in the block into a number of classes; and

select a value of said quantization step in a differentiated way according to the classes thus determined.

47. (Previously Presented) The system according to claim 26 wherein said video signals in said first format are signals generated according to a so-called Bayer pattern, which can be ordered in blocks of size 4x2 having the following pattern of chromatic components:

row 1 = $G_1R_1G_2R_2$

row 2 = $B_1G_3B_2G_4$

and wherein said vector quantization is a two-dimensional vector quantization applied to pairs $<R_1, R_2>$, $<B_1, B_2>$ together with $<G_1, G_2>$, $<G_3, G_4>$ or $<G_1, G_3>$, $<G_2, G_4>$.

48. (Original) The system according to claim 26 wherein said digital video signals in said first format are digital video signals in an RGB format and wherein said digital video signals in said second format are subjected to a change of co-ordinates to a color space chosen from at least one of YCbCr, YUV, UIQ, and YDbDr.

49. (Original) The system according to claim 26 wherein said vector quantizer is applied to adjacent pairs of pixels in a luminance plane.

50. (Original) The system according to claim 26 wherein in said digital video signals in said second format, chrominance planes are sub-sampled according to a quincuncial pattern.

51. (Currently Amended) An article of manufacture, comprising:

a computer-readable <u>memory</u> medium encoded with a computer program representing instructions to cause a processor, when the computer program is run, to:

convert a digital video signal having images organized in blocks of pixels from a first format to a second format, including instructions to use vector quantization to compress the first format into the second format, including instructions to cause said processor to obtain the vector quantization by repeatedly applying in a spatial domain a scalar quantizer to the pixels, which are in the spatial domain, of the blocks with an adaptive quantization step based on characteristics of the pixels in the spatial domain, wherein said quantization step determined in the adaptive way is performed in the spatial domain instead of transforming the pixels to a frequency domain, wherein the instructions to obtain the vector quantization include instructions to:

identify a sharpness value of edges in each of said blocks of pixels, and quantize said sharpness value to divide the edges into a number of classes; and

attribute a value to said quantization step differentiated according to the classes, wherein the value of the quantization step is increased near the edges of said images having said pixels,

wherein a same said quantization step is used for said scalar quantizer applied to each pixel within a block.

52. (Previously Presented) The article of manufacture of claim 51 wherein said instructions to convert include instructions to simultaneously reduce statistical and perceptive redundancy of data in the video signal.

53. (Previously Presented) The article of manufacture of claim 51 wherein said instructions to convert include instructions to change the quantization step based on at least one of lack of uniformity of pixels in a block and a level of brightness of the pixels in the block.

54. (Currently Amended) The article of manufacture of claim 51 wherein the video signals include multiplexed chromatic components, and wherein the computer-readable memory medium further includes instructions stored thereon to quantize the chromatic components separately.

55. (Previously Presented) The article of manufacture of claim 51 wherein said instructions to convert include instructions to concatenate a plurality of vector quantizations to obtain a multi-dimensional vector quantization, each of the vector quantizations resulting from repeated application of a scalar quantization.

56 - 57. (Canceled)

58. (Previously Presented) A system, comprising:

a means for receiving a digital video signal organized into blocks of pixels at a first format and for outputting the digital video signal at a second format;

a means for encoding the digital video signal from the first format to the second format, said means for encoding including a means for performing vector quantization to compress the digital video signal at the first format into the second format using repeated application in a spatial domain of a scalar quantizer to the pixels, which are in the spatial domain, of the blocks with a quantization step adaptively determined based on characteristics of the pixels in the spatial domain, wherein said quantization step determined in the adaptive way is performed in the spatial domain instead of transforming the pixels to a frequency domain, the means for performing vector quantization including:

means for identifying a sharpness value of edges in each of said blocks of pixels, and quantizing said sharpness value to divide the edges into a number of classes; and

means for attributing a value to said quantization step differentiated according to the classes, wherein the value of the quantization step is increased near the edges of said images having said pixels,

wherein a same said quantization step is used for said scalar quantizer applied to each pixel within a block.

59. (Previously Presented) The system of claim 58 wherein the means for adaptively determining the quantization step include a means for changing the quantization step based on at least one of lack of uniformity of pixels in a block, and a level of brightness of pixels in the block.

60. (Previously Presented) The system of claim 58 wherein said means for encoding includes a means for quantizing multiplexed chromatic components of the digital video signal separately.

61. (Previously Presented) The system of claim 58 wherein said means for encoding includes a means for executing a function of prediction of binary codes that are associated to respective quantized signals and that are used to express the digital video signals in the second format.

62. (Original) The system of claim 58 wherein the means for performing vector quantization include a means for concatenating a plurality of vector quantizations, each resulting from repeated application of a scalar quantization.

63. (New) A process, comprising:

converting digital video signals having images organized in blocks of pixels between a first format and a second format, said second format being a format compressed via vector quantization, said converting including:

obtaining said vector quantization from repeated application of a scalar quantizer to the pixels of said blocks with a quantization step determined in an adaptive way according to characteristics of the pixels, wherein said obtaining said vector quantization includes:

identifying a sharpness value of edges in each of said blocks of pixels, and quantizing said sharpness value to divide the edges into a number of classes; and

attributing a value to said quantization step differentiated according to the classes, wherein the value of the quantization step is increased near the edges of said images having said pixels,

wherein said quantization step is determined according to at least one law chosen from the following:

$m*E_Q + q$; and

$m*(t\hat{}E_Q) + q$;

where m and q are constants, determined selectively, and E_Q is an index which identifies said edge classes, and t is a scalar value.

64. (New) The process according to claim 63, wherein in passage from said first format to said second format, said digital video signals are subjected to at least one of the following:

sub-sampling;

low-pass filtering for anti-aliasing purposes before sub-sampling; and

multiplexing of at least one part of digital data necessary for representation of an image.

65. (New) The process according to claim 63 wherein said digital video signals in said second format are expressed in a form of binary codes associated to respective quantized signals, the process further comprising executing a function of prediction of said binary codes.

66. (New) The process according to claim 63 wherein in passage from said first format to said second format, the signal compressed via vector quantization is subjected to entropic encoding.

67. (New) The process according to claim 63 wherein said vector quantization is a multi-dimensional vector quantization resulting from concatenation of a plurality of vector quantizations, each resulting from repeated application of a scalar quantization.